Trend Study 16A-5-02

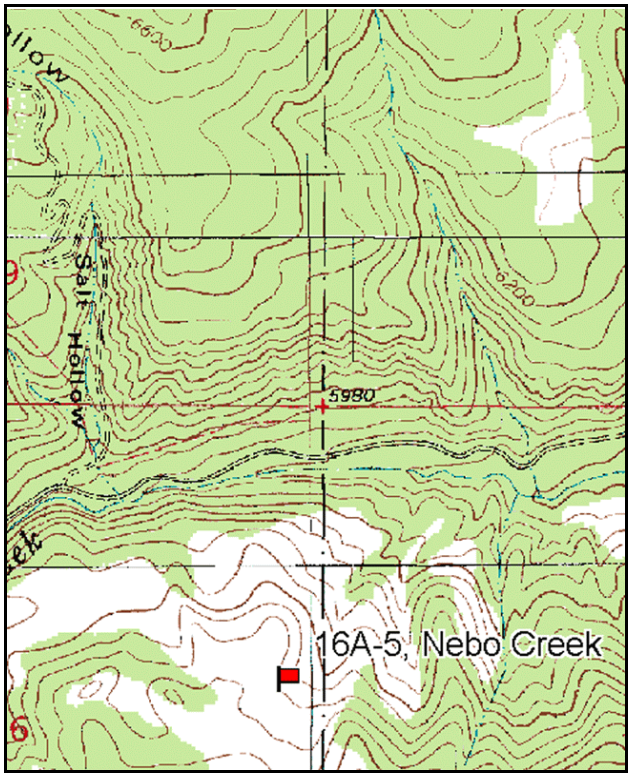
Study site name: Nebo Creek . Vegetation type: Mixed Oak-Sage .

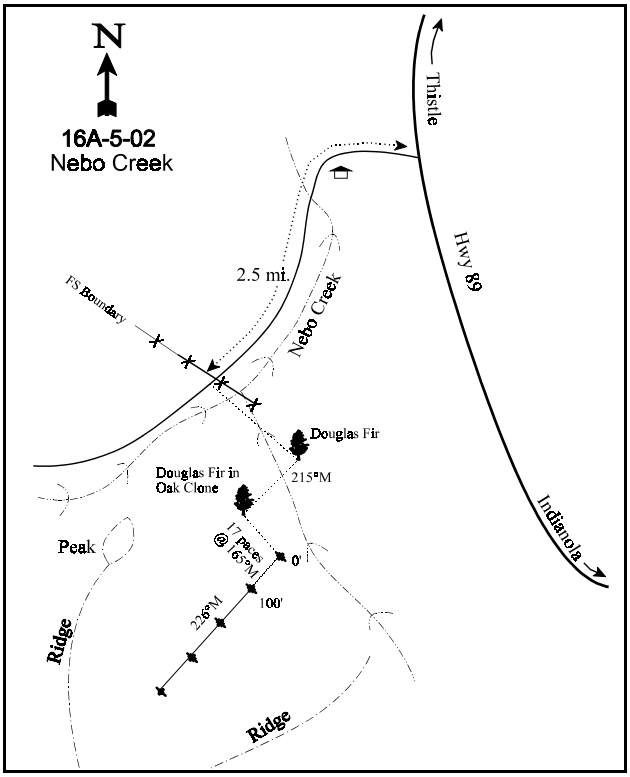
Compass bearing: frequency baseline 226 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

Beginning at the intersection of Highway US-89 and the Nebo Creek Road, proceed 2.5 miles westerly up Nebo Creek to the USFS boundary sign or the cattle guard. Park here. Take an azimuth of 185 degrees magnetic to the top of a lone Douglas fir. Proceed across Nebo Creek and uphill to the Douglas fir tree. From here walk at an azimuth of 215 degrees magnetic up a drainage to a fence line. From the fence line, walk 124 paces at the same azimuth to a second but smaller Douglas fir within a clump of oak brush. From this tree, the 0-foot baseline stake is 17 paces away at an azimuth of 165 degree magnetic. The study is marked by green steel "T" fenceposts approximately 12 to 18 inches in height.





Map Name: Spencer Canyon

Diagrammatic sketch

Township 11S , Range 3E , Section 16

GPS: NAD 27, UTM 12S 4412676 N 449921 E

DISCUSSION

Nebo Creek - Trend Study No. 16A-5

The Nebo Creek study is located on National Forest land at an elevation of 6,320 feet in the Nebo Creek drainage. The site slopes gently (10%) to the northeast. It is an area which has had high winter or spring-fall use for both deer and elk in the past, and livestock graze the area in summer. During the 1983 reading, numerous fresh deer and elk pellet groups, as well as three live deer were observed. In addition, carcasses of two deer and one elk were observed, along with two separate antler drops. Pellet group quadrat frequency in 1997 indicated light use of the area by all classes of animals. The entire area was burned in 2001 as part of the Nebo Creek fire. All of the browse was eliminated with the exception of resprouting Gambel oak and rabbitbrush. There is still some light use by deer and elk with 7 deer and 3 elk days use/acre estimated (17 ddu/ha and 7 edu/ha) in 2002 from a pellet group transect. During severe or even moderate winters, accumulations of snow probably force animals to lower elevations.

Soils in this area are characterized as stony loams. These are calcareous alkaline soils derived from sedimentary alluvium composed primarily of limestone, sandstone, or shale. Soil texture is coarse and drainage is rapid with a root zone at least 60 inches deep. Erosion hazard is slight (USDA-SCS 1981). Soil at the site is moderately deep with an effective rooting depth estimated at just over 15 inches. Soil texture is a clay loam with a moderately acidic pH of 6.0. Soil temperature was relatively low averaging only 41° F at a depth of 16 inches. There is some large rock cobble found on the surface and throughout the profile. Vegetation and litter were abundant prior to the fire in 2001 and signs of erosion were minimal. After the fire, vegetation cover declined from 61% in 1997 to 18% in 2002 and litter cover dropped from 55% to 7%. Percent cover of bare ground increased from 8% in 1997 to 65% in 2002. The erosion condition classification was determined as slight in 2002, but with high intensity precipitation, the erosion hazard is high until the herbaceous vegetation becomes reestablished.

The original study sampled an oak clone in the middle of a sagebrush-grass basin. Oak is also found on some of the slopes surrounding the basin. In 1997, the baseline was lengthened and moved entirely into the sagebrush-grass type. As a result, density of some of the species differs, especially oak. The key browse on the old baseline was Gambel oak. It was a mixed age stand that varied in height from a few inches to a treelike 12 to 15 feet in height. Age structure suggests a stable population. The degree of hedging in 1983 was variable with young plants showing only light use, while available portions of mature individuals were heavily utilized. Presumably, the smaller plants were covered by snow in winter. Use of the oak in 1989 was light. The stand was vigorous with a high proportion of the population consisting of young plants. With the change in the baseline in 1997, little oak was sampled. The fire of 2001 burned all of the oak. It is resprouting but none was encountered in the sample in 2002.

The area was characterized by a sagebrush-grass type with a mixture of basin big sagebrush (*Artemisia tridentata tridentata*) and mountain big sagebrush (*A. tridentata vaseyana)*. Basin big sagebrush was more abundant in all readings, and had an estimated density of 1,080 plants/acre in 1997. Mature plants were large and averaged 40 inches in height. Vigor was normal with no decadent individuals. Mountain big sagebrush numbered just 400 plants/acre in 1997. Use on both species was mostly light. All sagebrush was eliminated from the area by the Nebo Creek fire of 2001. It will take several years before sagebrush is reestablished in significant numbers.

Prior to the fire the most common shrub on the site consisted of stickyleaf low rabbitbrush which made up 53% of the shrub cover with a density of 3,540 plants/acre in 1997. The population was nearly all mature (98%), in good vigor, and unutilized. Other shrubs found on the site included a few threadleaf rubber rabbitbrush, prickly pear cactus, and a few heavily hedged serviceberry. After the fire, stickyleaf low rabbitbrush is resprouting and numbers 720 plants/acre. A few resprouting rubber rabbitbrush were also found on the site.

Grasses and forbs were abundant prior to the burn and provided a total of 57% cover in 1997. About half of the cover was provided by perennial grasses and half by forbs. The most common of these was Kentucky bluegrass and Sandberg bluegrass. Forbs were very abundant and diverse. Thirty-four species were encountered in 1997. Common species included peavine, American vetch, blue-eyed Mary, Beckwith milkvetch, stickseed, pacific aster and lambstongue groundsel. These and other species on the site provided important succulent spring and summer forage. Herbaceous cover in 2002, one year after the fire, averaged only 19%. The most abundant perennial grass is Sandberg bluegrass which has had fairly stable nested frequency values. Other perennial grasses are widely scattered and occur in small numbers. Perennial forbs have declined significantly since the burn. Common species sampled in 2002 include arrowleaf balsamroot, false dandelion, milkvetch, blue-eyed Mary, and peavine.

1983 APPARENT TREND ASSESSMENT

This site appears relatively stable. Ground cover is good, soil erosion is minimal, and vegetative composition is generally favorable.

1989 TREND ASSESSMENT

The soil trend is up slightly due to an increase in basal vegetation cover and a decline in percent bare ground. Sagebrush in the 1983 report was not divided into basin big sagebrush and mountain big sagebrush. Combined, big sagebrush remained at similar densities. They are lightly to moderately hedged and have normal vigor. The population has a high percentage of decadence, but there is a fair number of seedling and young plants. Sagebrush canopy cover averages 10%. On the density plots, a higher density and larger size of oakbrush was measured in 1989. Low rabbitbrush increased only slightly, and many display very poor vigor. Under the oakbrush, there is a low density of grass. Forbs are limited mainly to a rhizomatous aster. On the frequency lines, an improved diversity of forbs and grasses was sampled. There was a significant increase in the frequency of perennial grasses and forbs, possibly related to the lower amount of cheatgrass in 1989 compared to 1983 and/or no recent livestock use.

TREND ASSESSMENT
soil - up slightly (4)
browse - stable (3)
herbaceous understory - up (5)

1997 TREND ASSESSMENT

Trend for soil is stable with similar ground cover characteristics as 1989. The decline in litter cover is related mostly to moving the baseline out of the oak and into the sagebrush-grass type. Trend for sagebrush appears stable with light use, good vigor, and low decadence. There is a large population of the increaser, stickyleaf low rabbitbrush. It is composed almost completely of mature plants which would indicate a stable or possibly a future declining trend. The herbaceous understory is abundant and diverse with many useful species. However, the composition is dominated by weedy species that occur in high densities under heavy grazing pressure. Currently, the grass component is dominated by Kentucky bluegrass, a sod forming increaser. Several species of weedy forbs are also abundant. Data from the previous baseline cannot be used to determine a trend due to the difference in the herbaceous understory composition that is in association with the sagebrush-grass community.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - appears stable, but dominated by weedy increasers (3)

2002 TREND ASSESSMENT

Trend for soil is down due to the 2001 fire and the elimination of most vegetation and litter cover. Exposed bare ground is abundant and the erosion potential is high with any high intensity precipitation. At the time of the 2002 reading (6/18/02) there had been no significant precipitation and the erosion condition classification was determined as slight. Trend for browse is down. All shrubs were eliminated by the fire and the only browse found on the site were low numbers of resprouting rabbitbrush and Gambel oak. Trend for the herbaceous understory is down. Perennial grasses and forbs are still diverse and they should recover with time. There are several desirable species present which provide some valuable spring and summer forage for big game.

TREND ASSESSMENT
soil - down due to fire (1)
browse - down due to fire (1)
herbaceous understory - down due to fire (1)

HERBACEOUS TRENDS --
Herd unit 16A, Study no: 5

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
G	Agropyron cristatum	-	-	2	-	-	-	1	-	.15	-
G	Agropyron spicatum	a9	b36	c78	ab28	5	15	27	13	3.05	.91
G	Bromus marginatus	b16	c27	a-	a-	6	10	-	-	-	-
G	Bromus tectorum (a)	-	-	b131	a34	-	-	48	16	2.50	.53
G	Elymus cinereus	1	-	5	2	1	-	2	1	.97	.15
G	Elymus junceus	-	-	-	6	-	-	-	2	-	1.41
G	Melica bulbosa	a10	a3	b78	b52	4	1	33	26	2.05	1.68
G	Oryzopsis hymenoides	-	-	1	-	-	-	1	-	.03	-
G	Poa fendleriana	b22	c57	a-	ab7	9	26	-	3	-	.01
G	Poa pratensis	a6	b56	c173	a24	4	22	56	11	8.10	.35
G	Poa secunda	a34	a26	b154	b146	11	13	52	56	8.42	5.62
G	Sitanion hystrix	-	1	-	3	-	1	-	1	-	.03
G	Stipa columbiana	-	-	5	-	-	-	2	-	.01	-
G	Stipa lettermani	-	-	4	4	-	-	1	1	.03	.03
Total for Annual Grasses		0	0	131	34	0	0	48	16	2.50	0.53
Total for Perennial Grasses		98	206	500	272	40	88	175	114	22.83	10.20
Total for Grasses		98	206	631	306	40	88	223	130	25.34	10.74
F	Achillea millefolium	b21	ab20	ab17	a2	8	7	7	1	.88	.00
F	Agoseris glauca	a10	a-	b67	b59	4	-	32	24	.84	.39
F	Alyssum alyssoides (a)	-	-	a6	b24	-	-	3	10	.04	.22
F	Allium campanulatum	a8	b47	b62	a10	6	20	31	6	.33	.13
F	Antennaria rosea	-	-	-	3	-	-	-	1	-	.00
F	Arabis spp.	-	3	-	-	-	1	-	-	-	-
F	Artemisia ludoviciana	7	7	3	-	2	2	1	-	.15	-
F	Astragalus beckwithii	a-	a-	c49	b13	-	-	21	5	1.82	.21

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
F	Aster chilensis	$_{b}$35	$_{b}$43	$_{c}$76	$_{a}$1	15	15	28	1	1.86	.03
F	Astragalus convallarius	-	-	-	1	-	-	-	1	-	.03
F	Balsamorhiza sagittata	6	7	8	12	3	4	4	7	.73	1.23
F	Camelina microcarpa (a)	-	-	$_{b}$36	$_{a}$-	-	-	17	-	.13	-
F	Calochortus nuttallii	-	-	6	7	-	-	2	3	.01	.01
F	Chenopodium album (a)	-	-	3	-	-	-	1	-	.00	-
F	Cirsium spp.	$_{a}$-	$_{b}$14	$_{b}$13	$_{a}$-	-	8	5	-	.07	-
F	Collomia linearis (a)	-	-	$_{b}$119	$_{a}$-	-	-	56	-	.68	-
F	Comandra pallida	$_{b}$37	$_{a}$-	$_{a}$-	$_{a}$-	15	-	-	-	-	-
F	Collinsia parviflora (a)	-	-	$_{b}$258	$_{a}$123	-	-	88	48	3.96	.63
F	Crepis acuminata	$_{a}$3	$_{a}$16	$_{b}$56	$_{b}$55	1	8	21	29	.82	1.85
F	Cymopterus longipes	3	7	7	-	1	4	3	-	.04	-
F	Cynoglossum officinale	$_{a}$-	$_{ab}$6	$_{b}$12	$_{a}$-	-	3	5	-	.17	-
F	Delphinium nuttallianum	-	-	5	1	-	-	4	1	.04	.00
F	Descurainia pinnata (a)	-	-	10	14	-	-	5	5	.06	.16
F	Epilobium brachycarpum (a)	-	-	$_{b}$16	$_{a}$-	-	-	7	-	.11	-
F	Eriogonum racemosum	6	1	3	4	3	1	1	1	.03	.00
F	Hackelia patens	$_{ab}$16	$_{b}$41	$_{c}$72	$_{a}$5	7	16	28	3	2.07	.09
F	Holosteum umbellatum (a)	-	-	-	3	-	-	-	1	-	.00
F	Hymenoxys acaulis	-	-	2	-	-	-	1	-	.30	-
F	Lathyrus brachycalyx	$_{a}$97	$_{a}$54	$_{b}$172	$_{b}$164	42	25	57	63	9.14	2.15
F	Lactuca serriola	$_{a}$-	$_{bc}$13	$_{c}$18	$_{ab}$1	-	6	8	1	.38	.33
F	Lithospermum ruderale	1	6	10	1	1	3	4	1	.48	.01
F	Lupinus argenteus	8	5	4	4	4	2	2	3	.06	.16
F	Machaeranthera canescens	-	2	-	-	-	1	-	-	-	-
F	Microsteris gracilis (a)	-	-	$_{a}$-	$_{b}$23	-	-	-	12	-	.28
F	Phlox longifolia	$_{a}$-	$_{c}$88	$_{ab}$17	$_{a}$1	-	44	6	1	.08	.00
F	Polygonum douglasii (a)	-	-	17	5	-	-	7	3	.06	.01
F	Ranunculus testiculatus (a)	-	-	28	20	-	-	10	7	.15	.06
F	Senecio integerrimus	$_{a}$-	$_{a}$1	$_{b}$36	$_{a}$-	-	1	17	-	1.08	-
F	Sphaeralcea coccinea	-	3	-	-	-	1	-	-	-	-
F	Taraxacum officinale	$_{a}$12	$_{b}$40	$_{b}$46	$_{a}$6	7	22	23	2	.38	.03
F	Tragopogon dubius	$_{b}$26	$_{b}$14	$_{b}$16	$_{a}$-	14	9	10	-	.15	-
F	Veronica biloba (a)	-	-	$_{b}$17	$_{a}$-	-	-	6	-	.27	-
F	Vicia americana	$_{a}$10	$_{b}$52	$_{c}$106	$_{a}$6	6	22	38	2	3.71	.18
F	Viguiera multiflora	-	3	-	5	-	1	-	2	.03	.01
Total for Annual Forbs		0	0	510	212	0	0	200	86	5.48	1.38
Total for Perennial Forbs		306	493	883	361	139	226	359	158	25.70	6.90
Total for Forbs		306	493	1393	573	139	226	559	244	31.18	8.28

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Herd unit 16A, Study no: 5

Type	Species	Strip Frequency '97	Strip Frequency '02	Average Cover % '97	Average Cover % '02
B	Amelanchier alnifolia	1	0	.03	-
B	Artemisia tridentata tridentata	37	0	3.98	-
B	Artemisia tridentata vaseyana	15	0	2.98	-
B	Chrysothamnus nauseosus consimilis	1	1	.15	.03
B	Chrysothamnus viscidiflorus viscidiflorus	72	20	8.75	.35
B	Gutierrezia sarothrae	0	0	.00	-
B	Opuntia spp.	3	0	.06	-
B	Quercus gambelii	1	0	.63	-
Total for Browse		130	21	16.59	0.38

CANOPY COVER – LINE INTERCEPT
Herd unit 16A, Study no: 5

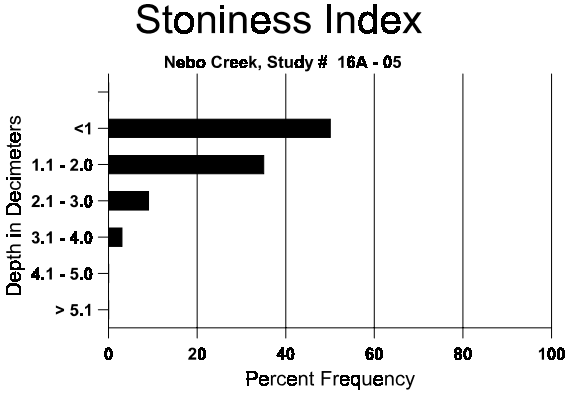
Species	Percent Cover '02
Chrysothamnus viscidiflorus viscidiflorus	.42

BASIC COVER --
Herd unit 16A, Study no: 5

Cover Type	Nested Frequency '97	Nested Frequency '02	Average Cover % '83	Average Cover % '89	Average Cover % '97	Average Cover % '02
Vegetation	385	285	0	3.00	61.17	18.42
Rock	84	237	.50	1.50	1.88	5.83
Pavement	156	345	.25	2.00	1.65	10.49
Litter	396	300	88.00	84.75	55.32	7.27
Cryptogams	56	-	0	.25	.54	0
Bare Ground	209	378	11.25	8.50	8.40	64.55

SOIL ANALYSIS DATA --
Herd Unit 16A, Study no: 05, Nebo Creek

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
15.2	41.0 (13.3)	6.0	34.7	34.7	30.6	3.5	39.6	320.0	.5



PELLET GROUP FREQUENCY --
Herd unit 16A, Study no: 5

Type	Quadrat Frequency '97	Quadrat Frequency '02	Pellet Transect: Pellet Groups per Acre '02	Pellet Transect: Days Use per Acre (ha) '02
Rabbit	-	-	-	-
Sheep	-	2	17	1 (3)
Elk	4	1	35	3 (7)
Deer	7	1	87	7 (17)
Cattle	5	-	9	1 (2)

BROWSE CHARACTERISTICS --
Herd unit 16A, Study no: 5

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier alnifolia																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	1	-	-	-	-	-	-	1	-	-	-	20	29	43	1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'83	00%	00%	00%
'89	00%	00%	00%
'97	00%	100%	00%
'02	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'83	0	-
	'89	0	-
	'97	20	-
	'02	0	-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata tridentata																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	89	3	-	-	2	-	-	-	-	-	5	-	-	-	333			5
	97	9	-	-	-	-	-	-	-	-	9	-	-	-	180			9
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	14	5	-	-	-	-	-	-	-	19	-	-	-	1266	28	38	19
	89	-	1	-	-	-	-	-	-	-	1	-	-	-	66	22	21	1
	97	44	-	-	1	-	-	-	-	-	45	-	-	-	900	40	47	45
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	83	6	3	-	-	-	-	-	-	-	9	-	-	-	600			9
	89	4	2	1	-	-	-	-	-	-	5	-	1	1	466			7
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	480			24
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	28%	00%	00%	-55%
'89	23%	08%	15%	+20%
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	1932	Dec:		31%
'89	865			54%
'97	1080			0%
'02	0			0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	1	-	-	-	-	-	-	-	1	-	-	-	66			1
	97	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	3	1	-	1	-	-	-	-	-	5	-	-	-	333	49	34	5
	97	11	1	-	1	-	-	-	-	-	13	-	-	-	260	27	39	13
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	3	3	-	-	-	-	-	-	-	6	-	-	-	400			6
	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	42%	00%	00%	-50%
'97	05%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	0	Dec:		0%
'89	799			50%
'97	400			10%
'02	0			0%

Chrysothamnus nauseosus consimilis																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20	37	41	1
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20	9	8	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	00%	+ 0%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'83	0	Dec:	-
'89	0		-
'97	20		-
'02	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus viscidiflorus																		
Y	83	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	89	3	-	-	1	-	-	-	-	-	2	-	2	-	266			4
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	22	-	-	-	-	-	-	-	-	22	-	-	-	440			22
M	83	24	-	-	-	-	-	-	-	-	24	-	-	-	1600	16	18	24
	89	15	-	-	2	-	-	1	-	-	15	-	3	-	1200	15	19	18
	97	173	-	-	-	-	-	-	-	-	173	-	-	-	3460	17	23	173
	02	14	-	-	-	-	-	-	-	-	13	-	1	-	280	6	7	14
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	7	-	-	-	-	-	-	-	-	-	-	6	1	466			7
	97	3	-	-	-	-	-	-	-	-	-	-	-	3	60			3
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	+14%
'89	00%	00%	41%	+45%
'97	00%	00%	02%	-80%
'02	00%	00%	03%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	1666	Dec:		0%
'89	1932			24%
'97	3540			2%
'02	720			0%

Juniperus osteosperma																		
M	83	1	-	-	-	-	-	-	-	-	1	-	-	-	66	67	79	1
	89	-	-	1	-	-	-	-	-	-	1	-	-	-	66	128	87	1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	+ 0%
'89	00%	100%	00%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'83	66	Dec:	-
'89	66		-
'97	0		-
'02	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	8	-	-	-	-	-	-	-	-	8	-	-	-	533			8
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	8	-	-	-	-	-	-	-	-	8	-	-	-	533	6	6	8
	89	8	-	-	2	-	-	-	-	-	10	-	-	-	666	5	8	10
	97	4	-	-	-	-	-	-	-	-	4	-	-	-	80	5	12	4
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	+56%
'89	00%	00%	00%	-93%
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	533	Dec:		-
'89	1199			-
'97	80			-
'02	0			-

Quercus gambelii																		
S	83	7	-	-	-	-	-	-	-	-	7	-	-	-	466			7
	89	8	-	-	-	-	-	-	-	-	8	-	-	-	533			8
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	23	-	-	-	-	-	-	-	-	23	-	-	-	1533			23
	89	70	5	-	8	-	-	9	-	-	91	1	-	-	6133			92
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	-	9	57	-	9	3	-	-	-	78	-	-	-	5200	43	18	78
	89	25	13	-	-	-	-	-	-	-	38	-	-	-	2533	85	36	38
	97	3	-	-	-	-	-	-	-	-	3	-	-	-	60	21	12	3
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	83	-	-	1	-	-	-	-	-	-	1	-	-	-	66			1
	89	1	2	-	-	-	-	-	-	-	3	-	-	-	200			3
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	18%	60%	00%	+23%
'89	15%	00%	00%	-99%
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	6799	Dec:		1%
'89	8866			2%
'97	60			0%
'02	0			0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Symphoricarpos oreophilus																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'83	00%	00%	00%
'89	00%	00%	00%
'97	00%	00%	00%
'02	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	-
	'89	0		-
	'97	0		-
	'02	0		-